Programming Fundamental

Week 10

Learning Outcomes:

After this lesson, students will be able to:

1. Attempt the File Manipulation tasks
2. Demonstrate an understanding of File Manipulation
3. Develop manipulation skills in C++ Language

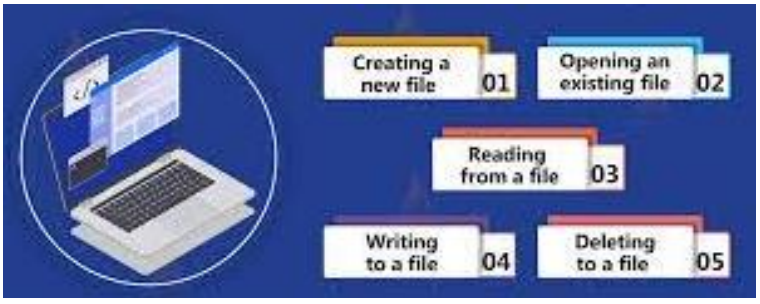
Instructions

- Use proper indentation to make your programs readable.
- Use descriptive variables in your programs (Name of the variables should show their purposes)

File handling

File handling in C++ refers to the task of storing data in the form of input or output produced by running C++ programs in data files, namely, a text file or a binary file for future reference and analysis.

Operation of File Handling:



File handling:

Write file

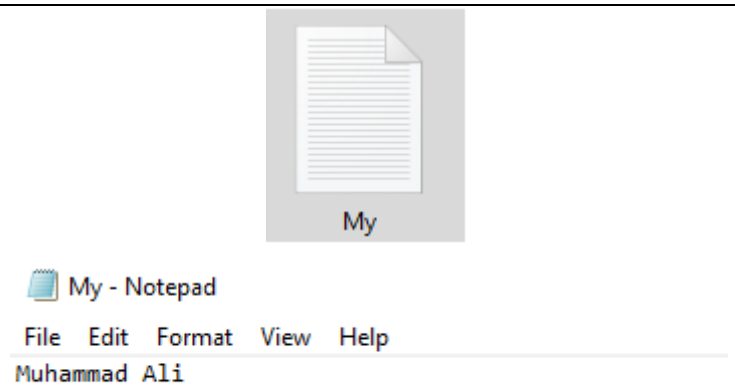
Example #1:

Write a program that stores your name in the file and named the output file as "My.txt".

Solution

```
#include <fstream>
using namespace std;
main()
{
    string line = "Muhammad Ali";
    fstream newFile;
    newFile.open("My.txt", ios::out);
    newFile << line;
    newFile.close();
}
```

The code produces the following output



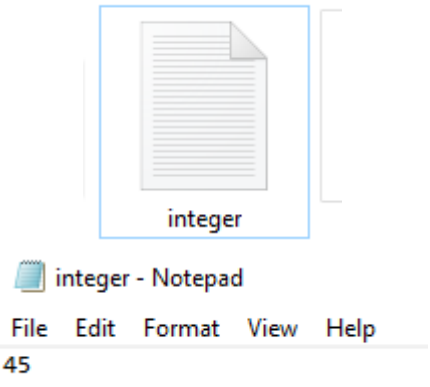
Example #2:

Write a program that stores an integer value in the file and named the output file as "integer.txt".

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    int value;
    fstream newFile;
    newFile.open("integer.txt", ios::out);
    cout<<"enter integer value "<<endl;
    cin>>value;
    newFile<<value;
    newFile.close();

}
```

The code produces the following output



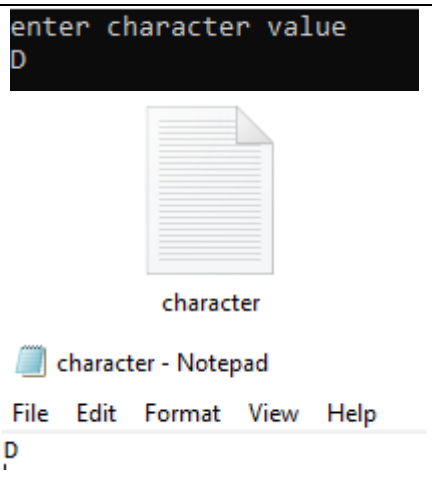
Example #3:

Write a program that stores a character in the file and named the output file as "character.txt".

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    char ch;
    fstream newFile;
    newFile.open("character.txt", ios::out);
    cout<<"enter character value "<<endl;
    cin>>ch;
    newFile<<ch;
    newFile.close();

}
```

The code produces the following output



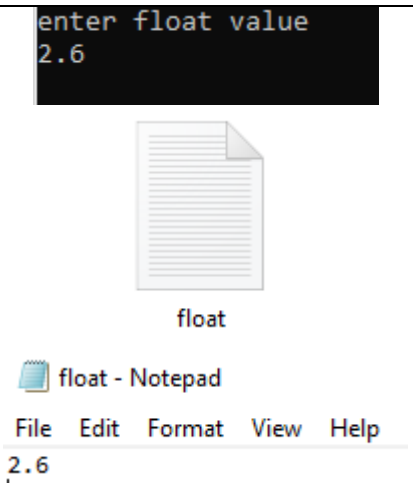
Example#4

Write a program that stores a float number in the file and named the output file as "float.txt".

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    char ch;
    fstream newFile;
    newFile.open("character.txt", ios::out);
    cout<<"enter character value "<<endl;
    cin>>ch;
    newFile<<ch;
    newFile.close();

}
```

The code produces the following output



Example#5

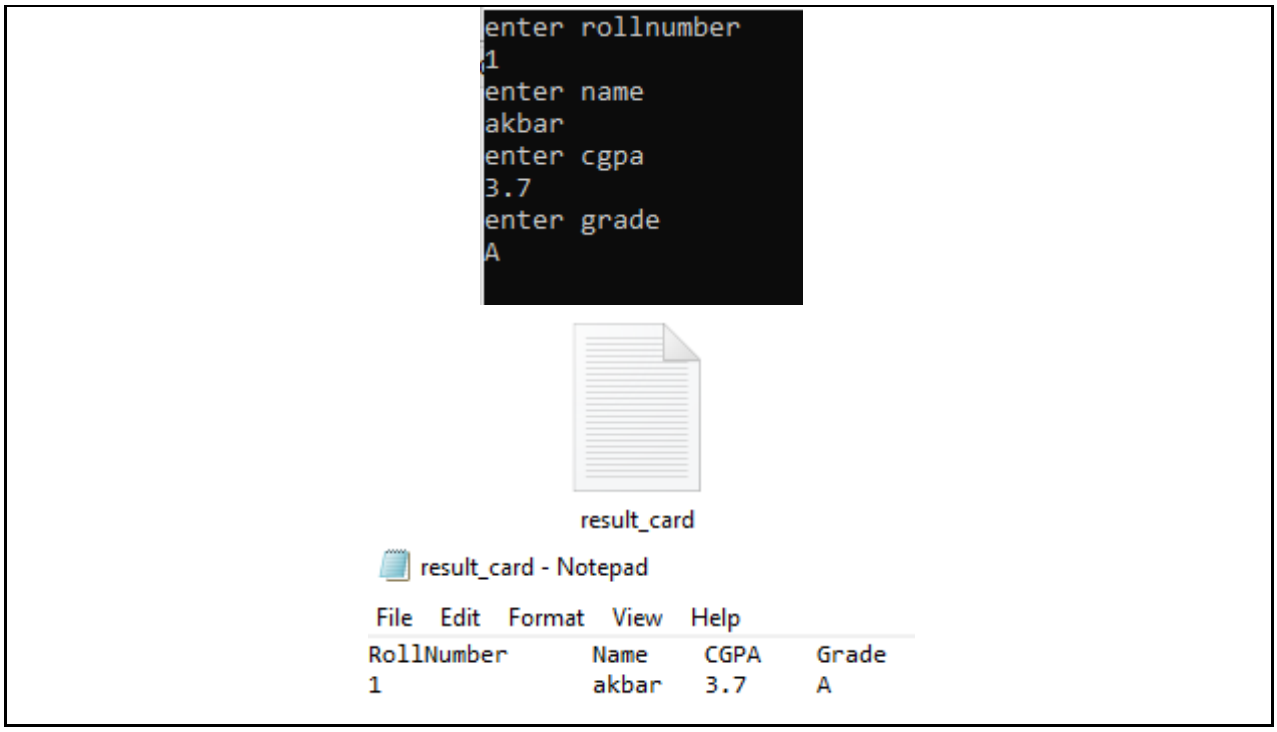
Write a program that create a file name as “result_card.txt” and store data in in the following format.

RollNumber	Name	CGPA	Grade
1	Akbar	3.7	A-

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    float cgpa;
    int rollnumber;
    string name;
    char grade;
    fstream newFile;
    newFile.open("result_card.txt", ios::out);
    cout<<"enter rollnumber "<<endl;
    cin>>rollnumber;
     cout<<"enter name "<<endl;
    cin>>name;
     cout<<"enter cgpa "<<endl;
    cin>>cgpa;
     cout<<"enter grade "<<endl;
    cin>>grade;
    newFile<<"RollNumber"<<"\t"<<"Name"<<"\t"<<"CGPA"<<"\t"<<"Grade"<<endl;
    newFile<<rollnumber<<"\t"<<name<<"\t"<<cgpa<<"\t"<<grade<<endl;
    newFile.close();

}
```

The code produces the following output

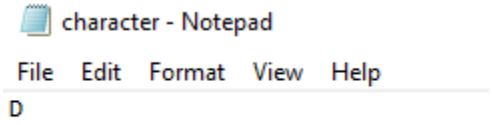


Read File

Example#6

Write a program that read a character from the file named "character.txt" and display on user screen.

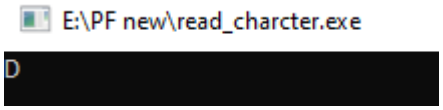
File View



Solution

```cpp
#include <fstream>
#include<iostream>
using namespace std;


int main()
{
    char ch;
    fstream newFile;

    newFile.open("character.txt", ios::in);

    newFile>>ch;
    cout<<ch<<endl;


}
```

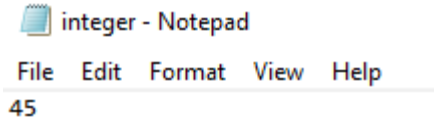
The code produces the following output



Example#7

Write a program that read integer value from the file "integer.txt" and display on user screen.

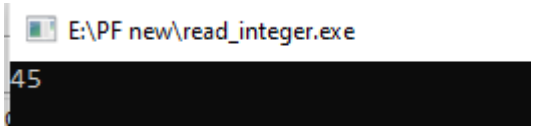
File View :



Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    int val;
    fstream newFile;

    newFile.open("integer.txt", ios::in);

    newFile>>val;
    cout<<val<<endl;

}
```

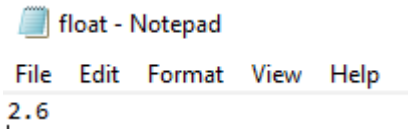
The code produces the following output



Example#8

Write a program that read float value from the file "float.txt" and display on user screen.

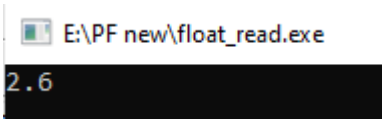
File View :



Solution

```cpp
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    float val;
    fstream newFile;
    newFile.open("float.txt", ios::in);
    newFile>>val;
    cout<<val<<endl;
    }
```

The code produces the following output



EOF(End of File)

Write a program that read all character from the file named "english" and display on user screen.

File View :

Solution

What are the basics of English grammar?
What level of English do the basic lessons come from?
What are the different levels of General English?
What is the best way to learn English for beginners?

```cpp
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    char ch;
    fstream newFile;
    int count=0;
    newFile.open("english.txt", ios::in);
    while(!newFile.eof())
    {
    newFile>>ch;
    cout<<ch;

}

    newFile.close();
}
```

The code produces the following output

```
WhatarethebasicsofEnglishgrammar?WhatlevelofEnglishdothebasiclessonscomefrom?WhatarethedifferentlevelsofGeneralEngli
hatisthebestwaytolearnEnglishforbeginners??
```

Example #10

Write a program that create a file name as "english" in the same format as given in box and read that text file line by line and display data on user screen.

Copies file data from following box.

What are the basics of English grammar?
What level of English do the basic lessons come from?
What are the different levels of General English?
What is the best way to learn English for beginners?

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    string line;
    fstream newFile;
    newFile.open("english.txt", ios::in);
    while(!newFile.eof())
    {

    getline(newFile, line);

    cout << line<<endl;
}
    newFile.close();

}
```

The code produces the following output

```
What are the basics of English grammar?
What level of English do the basic lessons come from?
What are the different levels of General English?
What is the best way to learn English for beginners?
```

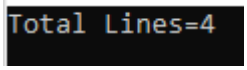
Example #11

Write a program that read the text file line by line and display total number of lines on user screen.

Solution

```
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    string line;
    fstream newFile;
    int count=0;
    newFile.open("english.txt", ios::in);
    while(!newFile.eof())
    {

    getline(newFile, line);
    count++;

}
cout<<"Total Lines="<<count<<endl;
    newFile.close();

}
```

The code produces the following output



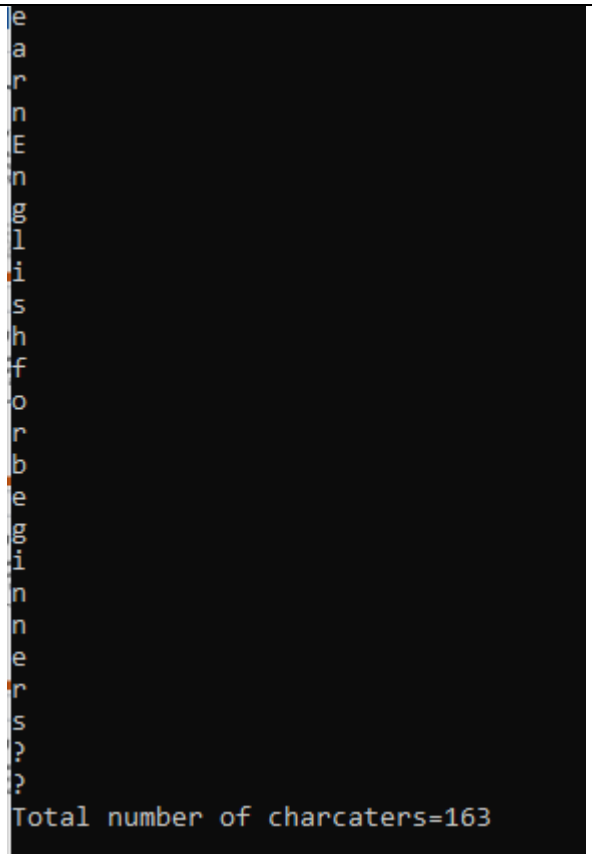
Example #12:

Write a program that read text file character by character and display total number of characters in the file.

Solution

```cpp
#include <fstream>
#include<iostream>
using namespace std;
int main()
{
    char ch;
    fstream newFile;
    int count=0;
    newFile.open("english.txt", ios::in);
    while(!newFile.eof())
    {
    newFile>>ch;
    cout<<ch<<endl;
    count++;

}
cout<<"Total number of charcaters="<<count<<endl;
    newFile.close();

}
```

The code produces the following output



Challenge#1:

Write a program that find the location of character in file if found else return -1.

Test case:

File view

```
What are the basics of English grammar?
What level of English do the basic lessons come from?
What are the different levels of General English?
What is the best way to learn English for beginners?
```

Input :

find location of :a

Output:

2

Challenge#2

Write a program that calculates the frequency of character in file.

File view

```
What are the basics of English grammar?
```

Input:

Find frequency of "m"

Output:

2

Challenge#3

Write a program that adds more line at the end of file using "ios::app" mode.

Challenge#4

1. You are assigned to develop a project in which the project manager wants the following functionalities.

   Create a file name **student.txt** in your Directory using the C++.

   Create a function that will ask the student's details from the console and then create a separate function to save that information in the separate line of the file **student.txt**.

   Information contains:

   1. Student Name
   2. Student Age
   3. Student School name (without spaces)
   4. Student Matric marks

5. Student College name (without spaces)
6. Student Fsc marks
7. Student Ecat Marks

Challenge# 5: (Reading Data Character by Character)

Write a function in C++ to count the number of lines from a text file "story.txt" which is not starting with an alphabet "T".

Example: If the file "story.txt" contains the following lines:

A boy is playing there.
There is a playground.
An aeroplane is in the sky.
The sky is pink.
Alphabets and numbers are allowed in the password.

The function should display the output as 3

Challenge#6

Write a function display_words() in c++ to read lines from a text file "story.txt", and display those words, which are less than 4 characters.

Challenge#7 (Append Data)

1. You are assigned to develop a project in which the project manager wants the following functionalities.

   Now consider the file named **student.txt** is already present in your Directory. File already contains the information of some students.

   Information contains:

   1. Student Name
   2. Student Age
   3. Student School name (without spaces)
   4. Student Matric marks
   5. Student College name (without spaces)
   6. Student Fsc marks
   7. Student Ecat Marks

Create a function that will ask the student's details on the console and then create a separate function to append that information in the separate line of the file **student.txt**.

Information contains:

1. Student Name
2. Student Age
3. Student School name (without spaces)
4. Student Matric marks
5. Student College name (without spaces)
6. Student Fsc marks

7. Student Ecat Marks